

REMARKS

Claims 1, 5-9, 11 and 12 are pending in the present application. By the present amendment, claims 2-4 and 10 have been canceled, claims 1, 7 and 11 have been amended, and new claims 13-53 have been added.

In the Office Action, claims 1, 5-9, 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, on the ground that the terms "the contact time" in claims 1, 7 and 11 and "the pressure drop" in claim 1 lack antecedent basis.

The terms have been replaced by "a contact time" and "a pressure drop," respectively. Accordingly, it is submitted that the rejection should be withdrawn.

Next, in the Office Action, claim 7 has been rejected under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 5,725,756 to Subramaniam et al. (Subramaniam), claims 1, 5-6, 11 and 12 are rejected under 35 U.S.C. §103(a) as obvious over Subramaniam in view of U.S. Patent No. 4,985,230 to Baden et al. (Baden), and claims 8-9 are rejected under 35 U.S.C. §103(a) as obvious over Subramaniam in view of Baden and WO 90/07377 to Eri et al. (Eri).

Reconsideration and withdrawal of the rejections is respectfully requested. Subramaniam fails to teach or suggest a catalytic process and reactor providing an enhanced production rate as obtained in the presently claimed invention, and Baden as well as the other cited references fail to remedy the deficiencies of Subramaniam.

In particular, with respect to claims 1, 5, 7-9 and 11-12, even though Subramaniam attempts to "maximize reaction rates," Subramaniam fails to teach or suggest a low contact time as in the present invention. The contact time in the reactor of Subramaniam remains on the order of several seconds, which is considerably higher than the contact time of less than about 0.3 seconds, as recited in the present claims.

In the absence of explicit teaching regarding contact time in Subramaniam, a person of ordinary skill in the art would seek guidance in Example 3 of Subramaniam in which the reactor dimensions and reactant flow conditions are described. The contact time in Example 3 of Subramaniam, when calculated in accordance with the definition in the present application

(paragraph bridging pages 14 and 15), is about 26 seconds. Accordingly, the person of ordinary skill in the art would conclude that a contact time of about 26 seconds is appropriately maximized, and would find no motivation to further reduce contact time, and certainly not a reduction of about 10 times as would be required to obtain a contact time of less than about 0.3 as recited in the present claims.

Further, none of the other cited references remedies this deficiency of Subramaniam. As a result, the person of ordinary skill in the art would not have any motivation to obtain a contact time of less than about 0.3. Therefore, present claims 1, 5, 7-9 and 10-11 are not obvious over the cited references taken alone or in any combination.

Next, with respect to present claims 1, 6 and 11-12, Baden fails to teach or suggest a heat exchange rate of at least 0.6 W/cc as recited in present claims 1, 10 and 11. Specifically, based on the experimental results in Table 3 at cols. 11-12, the heat transfer rates in Baden (heat transfer coefficient h of 117 to 230 kcal/m²hr°C in a 55x300x1000mm reaction chamber) are several orders lower than 0.6 W/cc. Here also, the deficiency of Baden is not remedied in the other cited references. Therefore, present claims 1, 6 and 11-12 are not obvious over the cited references taken alone or in any combination.

In summary, the process and reactor of the present claims provide important advantages in terms of enhanced production rate, improved heat transfer rate and reduction of undesirable by-products, as reported in the present application. The features of the various present claims and their advantages are not taught or suggested in any of the cited references, and therefore, the present claims are not obvious over the cited references taken alone or in any combination.

In view of the above, it is submitted that the obviousness objection should be withdrawn.

CLOSURE

Applicant has made an earnest attempt to place the above referenced application in condition for allowance and action toward that end is respectfully requested.

If the Examiner has any questions or would like to speak to Applicants' representative, the Examiner is encouraged to call Applicants' attorney at the number provided below.

Respectfully submitted,

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